Metadata Guide

Gerry Daumiller
Montana State Library (NRIS)
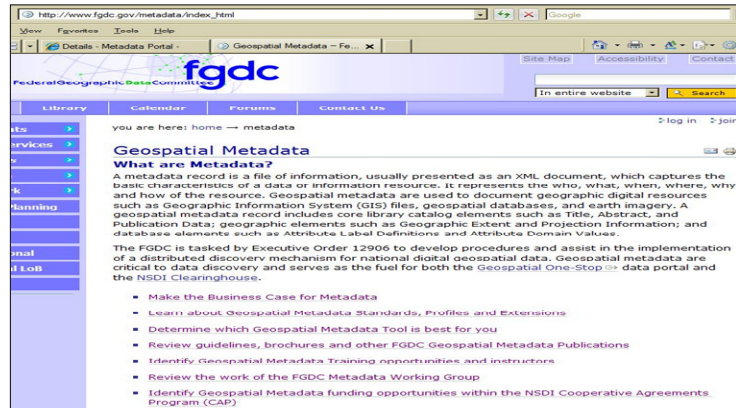gdaumiller@mt.gov

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Slide 2

Metadata

1. What is it?
2. How do you make it?
3. What should be in it?
4. What HAS to be in it for the Portal?
5. How does the Portal use it to classify and find your data?

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Metadata is "data about data". For GIS data, there is are two standards that you may follow that tell you what should be in your metadata. One is called the Content Standard for Digital Geospatial Metadata (CSDGM) from the Federal Geographic Data Committee (FGDC), and the other is from the International Standards Organization (ISO). I am only familiar enough with the ISO standard to know that it seems to be much harder to work with than the FGDC standard. I think the Portal can work with the ISO standard, but if you choose to use it, I won't be able to help you with it.

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The GIS portal has links to more information about metadata and how to publish your metadata on the Portal.

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What is Metadata?

Metadata for Montana Names from the Geographic Names Information System

- Identification Information
- Data Quality Information
- Spatial Data Organization Information
- Spatial Reference Information
- Entity and Attribute Information
- Distribution Information
- Metadata Reference Information

Identification Information:

Citation:
Originator: U.S. Geological Survey
Publication date: 03/24/2008
Title: Montana Names from the Geographic Names Information System
Publication place: Helena, MT
Publisher: Montana State Library
Online linkage: http://nris.mt.gov/nsdi/nris/shape/gnis.zip

Abstract:
The Geographic Names Information System holds the Federally recognized name of and a location for physical and cultural geographic features of all types in the United States, current and historical, but not including roads and highways. The database assigns a unique, permanent feature identifier as a standard Federal key for accessing, integrating, or reconciling feature data from multiple data sets. The GNIS collects data from a broad program of partnerships with Federal, State, and local government agencies and other authorized contributors. The GNIS provides data to all levels of government and to the public, as well as to numerous applications through a web query site, web map and feature services, file download services, and customized files upon request.
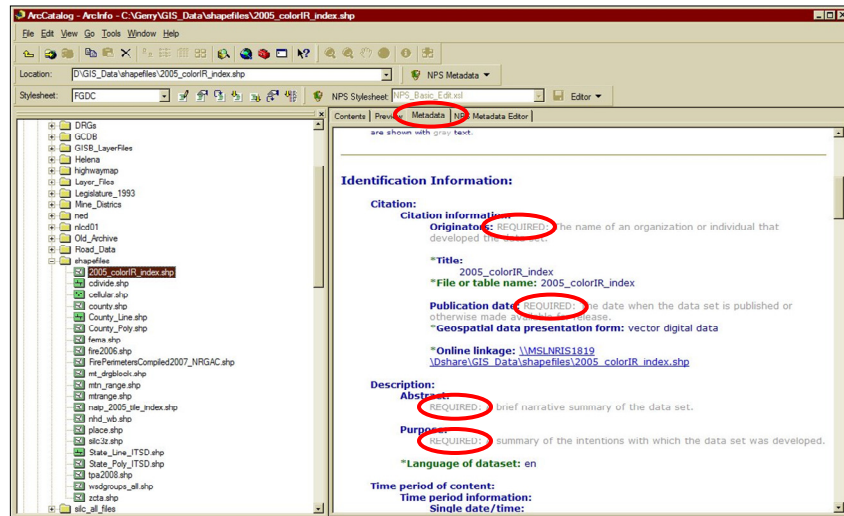
The only metadata tool I am familiar with and can discuss is ESRI's ArcCatalog. The FGDC metadata web page has links to other tools that can help you make FGDC metadata.

You really need a tool that can read metadata in plain language and transform it into XML format. Metadata uploaded to the Portal must be in XML format.

ArcCatalog by default automatically makes a metadata file for any data you click on when the metadata tab is selected. This automatically creates scores of notations about what ArcCatalog thinks is required in your metadata that you have to track down and fix. It is much easier to create metadata it you set ArcCatalog to not do this (see next slide).
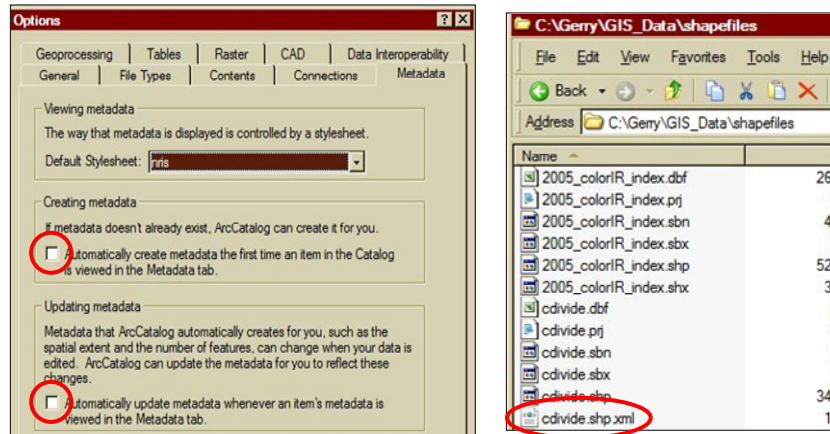
In ArcCatalog, select Tools from the main menu and then select Options. Turn off BOTH of the checkboxes, so that ArcCatalog never messes with your metadata unless you want it to.

ArcCatalog stores metadata for shapefiles on disk with the shapefile as a ".shp.xml" file. Metadata for geodatabase layers is stored in tables where it is not easily accessible without ArcCatalog.
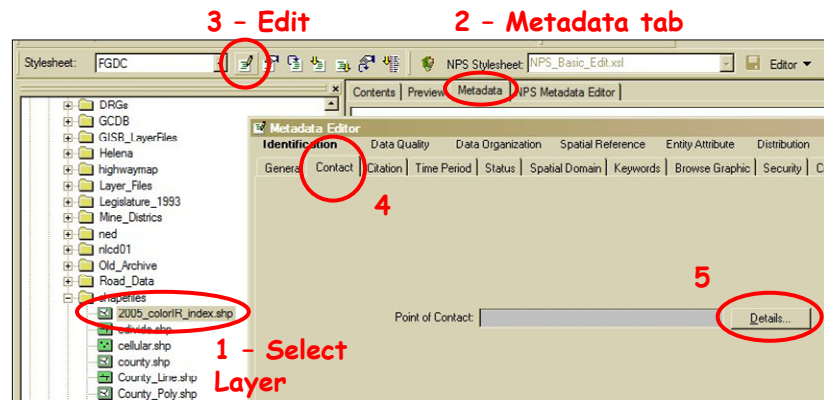
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Metadata contains a lot of information about you and your organization. It is easier to make metadata for a layer if you can start by loading an empty metadata record that has your contact information in it.

The next couple of slides guide you through the process of finding the parts of a metadata record that you probably will want to re-use and filling them out.

Click the Edit button while looking at a layer that has no metadata, to start an empty record.

The first place to enter your basic info is the Contact tab. Click it, then click the Details button.

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There are two tabs to fill out on the Contact Information window. Notice that you can have more than one Address, telephone number, and Email address. The metadata standard was created before anyone had cell phones, so there isn't a separate field for it.

The Distribution section is where you put your standard liability statement, and it has a contact section that you fill out the same way you did with the Point of Contact. In a large organization, these could be different people, and each person might want their own metadata template.

THE RESOURCE DESCRIPTION IS WHERE YOU TELL THE PORTAL WHAT TYPE OF RESOURCE THIS IS, such as downloadable data, live data, or a mapping application. Use one of the choices given later in this presentation. You can put the value you will use for most of your metadata here, but if you have different types of resources available, this is an important field to think about for each document.

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The Metadata Reference section tells who wrote the metadata and when. The Contact section has the same format as the Point of Contact and the Distributor.

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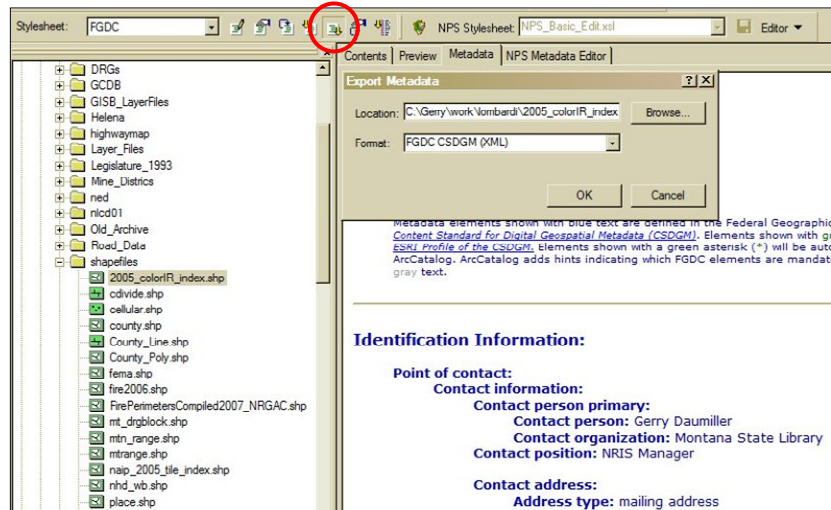
After you save your work on your template, export it to FGDC XML format.

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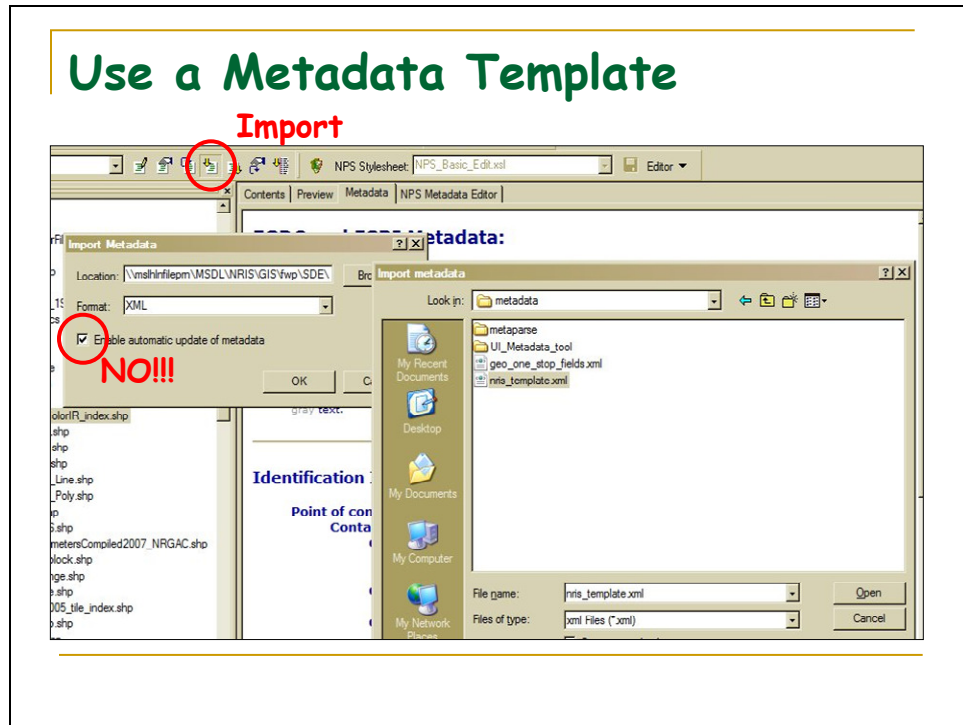
Now you can go to a layer you want to make metadata for and import the template file you saved.

I always turn off the "Enable automatic update of metadata". This messes up the title of your metadata document if you are importing a template that already has a title.
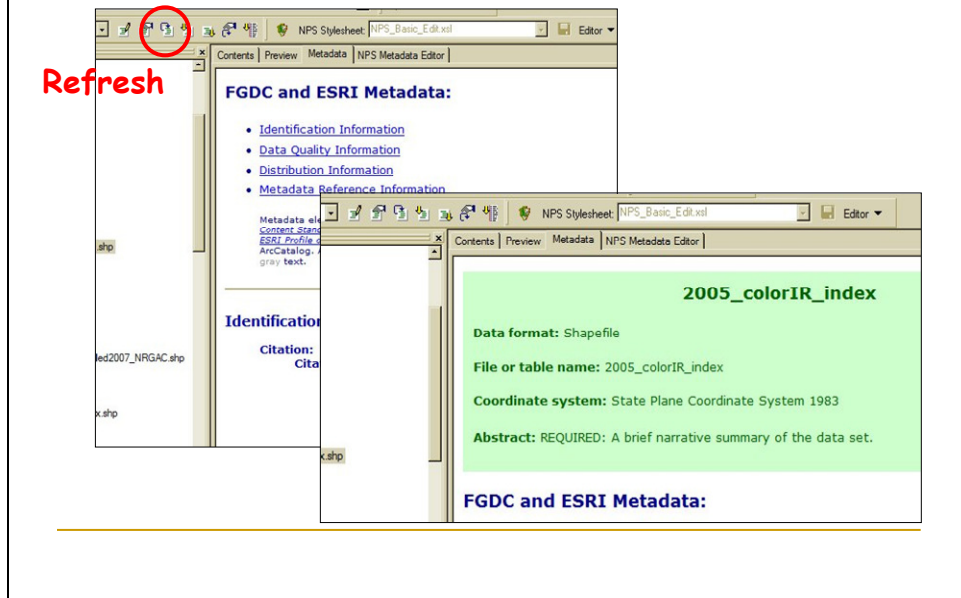
AFTER you have imported your template, click on the Create/Update metadata button, and it will fill out lots of stuff about your layer automatically – geographic extent, number of features, coordinate system, and a list of the attribute fields.

When you do this ArcCatalog will still make a bunch of entries in the metadata saying what you are required to fill out, but there are a lot fewer of them to track down than if you hadn't used the template.

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Originator: Who made this data set? In this example, a good case could be made for saying US Census Bureau instead of State Library, since most of it came from there.

Title: WHERE, WHAT, and WHEN

Publication Date: Required by the Portal.

Publisher: Who is responsible for distributing it? For this data, it is really the State Library rather than the Census Bureau, because of the work we did on it that you can't get from them. If you can get almost exactly the same data from the Census Bureau, I still suggest putting your organization here, since you are who people will be getting it from.

Online linkage: The Portal has rules, described later, for how this should be filled out for different data types.

Purpose: This can be a general purpose statement of what the data is good for, or your specific purpose for creating the data, such as "This was created so that we could make a school district map with student enrollment for the Office of Public Instruction."

The Point of Contact must be filled out for the Portal to accept the metadata.

Theme Keywords: For the Portal, there MUST be a Theme section with a Theme keyword thesaurus whose value is "ISO 19115 Topic Category". You must choose at least one keyword from the following list:

The 19 Theme Keywords

ISO 19115 Topic Category

001 farming
002 biota
003 boundaries
004 climatologyMeteorologyAtmosphere
005 economy
006 elevation   011 intelligenceMilitary
007 environment   012 inlandWaters
008 geoscientificInformation 013 location
009 health   014 oceans
010 imageryBaseMapsEarthCover 015 planningCadastre
                        016 society
                        017 structure
                        018 transportation
                        019 utilitiesCommunication

Theme Keywords: For the Portal, there MUST be a Theme section with a Theme keyword thesaurus whose value is "ISO 19115 Topic Category". You must choose at least one keyword from the following list:

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What Should Be In a Metadata Document?

Source information:
    Originator: U.S. Census Bureau
    Publication date: 2000
    Title: 2000 Tiger/Line Files
    Edition: 2000 Redistricting
            Publication place: Washington, DC
            Publisher: U.S. Census Bureau
    Source scale denominator: 100000
        Source contribution:
            The school district boundary coordinates, except for those within Missoula County, and school district names were selected and copied from the
            TIGER files.
        Calendar date: 2000
Source information:
    Originator: Missoula County Surveyor's Office
    Publication date: Unpublished Material
    Title: Missoula County Elementary School District Boundaries
    Source scale denominator: 24000
        Source contribution:
            The school district boundary coordinates within Missoula County were copied from this source.
        Calendar date: 2004
Source information:
    Originator: Montana Office of Public Instruction
    Publication date: 2000
    Title: Fall 2000 Enrollment
            Publication place: Helena, MT
            Publisher: Montana Office of Public Instruction
    Source contribution: The 2000 Enrollment data was copied from this source.
    Calendar date: 08/2000

Process step:
    The TIGER/Line files were imported into a series of ArcView shapefiles using TGR2SHP version 4.1 by GIS Tools of Knoxville, TN. This step produced
    shapefiles for each county of elementary school districts and unified school districts.
        Process date: 2001
Process step:
    The individual county unified and elementary school district shape files were projected to Montana State Plane Coordinates and combined into a single
    data set.
        Process date: 2001
Process step: The fall enrollment data was joined to the attribute table.
        Process date: 2001
Process step:
    Boundary lines from the Missoula County data were incorporated into the data set
        Process date: 06/03/2004

Sources and Processing.

What material was assembled to create this data set? How did you do it?

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What Should Be In a Metadata Document?

Entity and Attribute Information:

Attribute label: Shape
  Attribute definition: Feature geometry.

Attribute label: GNIS_ID
  Attribute definition:
    This is the unique Feature_ID assigned to the feature by the GNIS. This copy of the GNIS has eight
    features with GNIS-IDs between 0 and 7 that were added by the State Library and do not have official
    GNIS feature IDs yet.

Attribute label: Name
  Attribute definition:
    Official Feature Name. If a feature has a 1 in the ten millions column of the Change_Log field, the name
    was edited by the State Library.

Attribute label: Class
  Attribute definition:
    The GNIS has 65 types that a feature may be classified as. 58 of these classes occur in this file for
    Montana. If a feature has a 1 in the hundreds column of the Change_Log field, the feature has been
    reclassified at the State Library.

Attribute Value	Definition of Attribute Value
airport	manmade facility maintained for the use of aircraft (airfield, airstrip, landing field, landing strip)
arch	natural arch-like opening in a rock mass (bridge, natural bridge, sea arch)
area	any one of several areally extensive natural features not included in other categories (badlands, barren, delta, fan, garden)

Attribute list and explanations. ArcCatalog makes the list for you, but you should
include an explanation of what they all mean.

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Working With Attributes in ArcCatalog
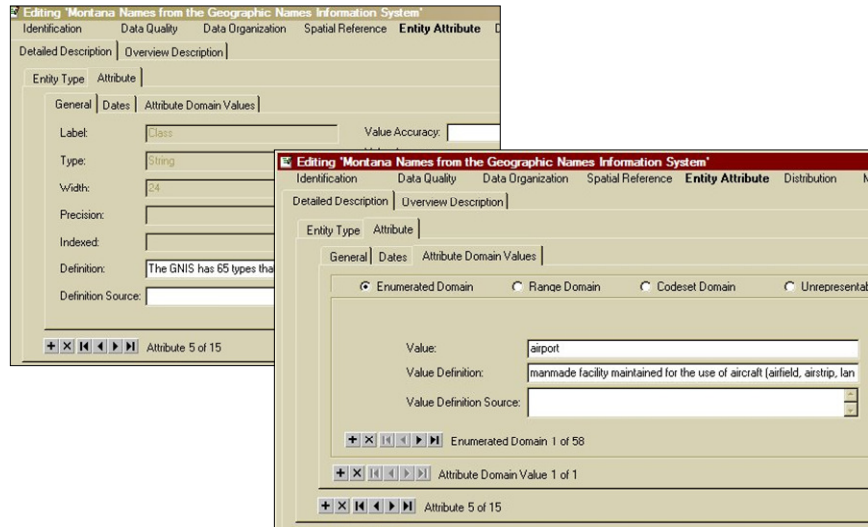
If an attribute has a limited list of values that are allowed in it, you should use the Enumerated Domain to make a list of them and what they mean.

It can be really helpful to type some of this stuff in a text editor ahead of time and copy and paste it into the little ArcCatalog fields.

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What Should Be In a Metadata Document?

Distributor:
Montana State Library
PO Box 201800
Helena, MT 59620-1800

Telephone: 406-444-5358
E-Mail: nris@mt.gov

Resource description: Downloadable Data

Distribution liability:
Although these data have processed successfully on a computer system at the City of Helena, no warranty expressed or implied is made regarding the purposes, nor shall the act of distribution constitute any such warranty. This disclaimer applies both to individual use of the data and aggregate use with other data. It is strongly recommended that careful attention be paid to the contents of the metadata file associated with these data. The City of Helena and the Montana State Library shall not be held liable for improper or incorrect use of the data described and/or contained herein.
Standard order process:
Digital form:
Format name: MrSID
Online option: http://nris.mt.gov/nsdi/orthophotos/2006_helena.html

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Metadata Reference Information:

Metadata date: 06/11/2007
Metadata contact:
City of Helena
316 N. Park Ave.
Helena, Montana 59624

Distributor: Who can I get the data from? This is required by the Portal

Resource Description: Must be one of the data types shown on the next slide.

Standard Order Process: Not required, but nice to have.

Metadata Contact Address: required for the Portal.

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Resource Description

1. **Live Data and Maps**: Web services that may be added to map applications.
2. **Downloadable Data:** Data files which may be downloaded and then added to a map.
3. **Offline Data:** Data files that you have to order.
4. **Static Map Images:** Map images that may be downloaded
5. Document
6. Applications
7. Geographic Services
8. Clearinghouse
9. Map Files
10. Geographic Activities

The Resource Description in the Distribution Information must be filled out with one of the values shown.

Make a Link to Your Data

Online Linkage Rules

Live Data and Maps

- **ArcIMS**: http://<server>/image/<service>
    - http://maps.nris.mt.gov/image/raster_svc
- **OGC Map Service:** (4 types)
    - http://<server>/<servlet-path>/com.esri.wms.Esrimap
    - http://<server>/<OGC Type>/<path>
        - *OGC* Type is **wfs**, **wms**, or **wcs**
    - http://<server>/<path>/service=<OGC Type>
    - http://<server>/<path>/<text>request=getmap<text>
        - http://maps.mt.com/OGCservlet/OGC?ServiceNam e=MTmaps&request=getmap&Layers=State

If the Resource Description is Live Data and Maps and the Online Linkage follows these rules, the Portal will make a button for adding the service to the Map Viewer.

Online Linkage Rules

Downloadable Data

http://<server>/<path>/<filename>.<extension>
or
ftp://<server>/<path>/<filename>.<extension>

Extensions: zip gz tar tgz dbf shp rar xls txt dwg dxf dgn e00

If the Resource Description is Downloadable Data and the Online Linkage follows these rules, the Portal will make a button for downloading the data.

Online Linkage Rules

Static Map Images

http://<server>/<path>/<filename>.<extension>
or
ftp://<server>/<path>/<filename>.<extension>

Extensions: gif jpg jpeg bmp pdf pmt tif tiff cal pct pict
eps mxd av mpg mpeg wmv img rm

For all other Online Linkage/Resource Description
combinations, the Portal will make a "Go to website"
button for the link.

If the Resource Description is Live Data and Maps and the Online Linkage follows these rules, the Portal will make a button for downloading the map.